

Leucoptera lathyrioliella (Stainton, 1866) and *L. orobi* (Stainton, 1870): two distinct species (Lyonetiidae)

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Abstract. *Leucoptera lathyrioliella* (Stainton, 1866) and *L. orobi* (Stainton, 1870) are considered distinct species on the basis of constant differences in the morphology of both male and female genitalia. No support was found for literature statements of differences in external appearance between the species. Likewise, the presumed differences in their host plants appear uncertain or erroneous, since both species exploit several host plant species in the plant genera *Vicia* and *Lathyrus*.

Key words. Lyonetiidae, *Leucoptera lathyrioliella*, *orobi*, distinct species.

Introduction

Species of the genus *Leucoptera* Hübner, [1825] (Lyonetiidae) are very small moths with typically silky white or grey forewing ground colour and distinctive eye-spots at apex of the wing. The taxonomy of the West-Palaearctic species of the genus was recently revised by Mey (1994), who recognised twenty species to occur in the area.

Among the species, some uncertainty has occurred in the taxonomic status of *L. lathyrioliella* (Stainton, 1866) and *L. orobi* (Stainton, 1870). Pierce & Metcalfe (1935) and Buszko (1981) illustrate the genitalia of these species. Their pictures, well in agreement with each other, display obvious differences between them. However, Mey (1994) considered them conspecific and accordingly synonymised *L. orobi* with *L. lathyrioliella*. Baraniak (1996) reports *L. lathyrioliella* (including *L. orobi*) to occur in western, central and northern Europe. In Finland, both *L. lathyrioliella* and *L. orobi* have been reported to occur. However, *L. orobi* was excluded from, e.g., the Finnish checklist (Varis et al. 1995) following Mey (1994). According to the literature, these species are identifiable by their wing pattern as well, and they are reported to have different host plants. *Lathyrus linifolius* (= *L. montanus*) is reported to be the host plant of *L. orobi*. The record of *L. tuberosus* as another host plant is considered a confusion due to plant nomenclature (Emmet 1985). *Lathyrus sylvestris* and *L. pannonicus* are listed as host plants of *L. lathyrioliella* (Emmet 1985, 1988; Mey 1994).

The separation of these supposed taxa seems not possible using external appearance of adults. The wing pattern of both species varies more than mentioned in the literature, and differences suggested in the literature (e.g. hindwing fringe, cf. Emmet 1985) could not be verified after examination of over 50 specimens of both species. Moreover, both species have proven to exploit several host plants. Therefore, the host plant cannot be used as identification guide either. Yet, structures in both male and female genitalia possess features that constantly differ between the taxa *L. lathyrioliella* and *L. orobi*. After examination of the genitalia of a considerable number of individuals



Figs. 1–2. Adults of *Leucoptera*. 1. *L. orobi*. 2. *L. lathyrioliella*.

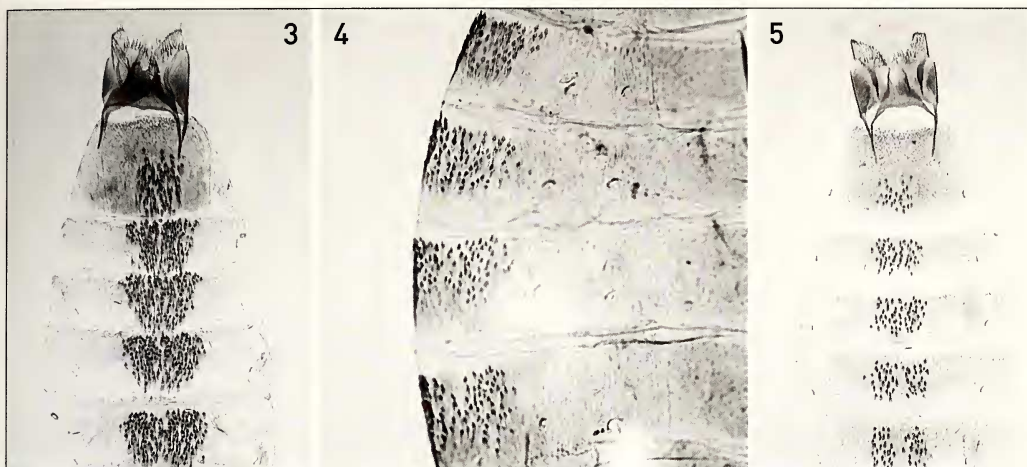
we suggest that *L. lathyrioliella* and *L. orobi* are indeed distinct species, in agreement with Pierce & Metcalfe (1935) and Buszko (1981). In this paper we revise the taxonomy of *L. lathyrioliella* and *L. orobi*, largely based on Finnish material. We provide diagnoses and illustrate the differentiating characters for these species.

The terminology follows Mey (1994). Material for the study was obtained from the following collections: BMNH (The Natural History Museum, London, U.K., K. Tuck), MNHB (Museum für Naturkunde, Humboldt-Universität Berlin, Germany, W. Mey), MZH (Zoological Museum, Finnish Museum of Natural History, University of Helsinki, Finland, L. Kaila), NMS (National Museum of Scotland, Edinburgh, Scotland, K. P. Bland) and the following private collections: Jari Junnilainen (Vantaa, Finland), Marko & Tomi Mutanen (Oulu, Finland), Kari Nupponen (Espoo, Finland) and Kari Vaalamo (Espoo, Finland).

Leucoptera orobi (Stainton, 1870)

Figs. 1, 3, 4, 6, 8, 9

Material. Lectotype ♀ slide of *Cemiosstoma orobi* Stainton labelled: *Cemiosstoma / orobi* STAINTON / lectotype / Scarboro / Mey 13/02 III. 02; BMNH Microlep. / 30226 / Euparal. BMNH, here designated. **Estonia:** Kogula, 20.vi.1994 1♀ J. Junnilainen leg. (slide BW 4891); Paldiski 2.vi.2000 1♂ J. Junnilainen leg. (slide BW 4292); **Finland:** AI: Kökar, Hamnö, 27.vi.1948 1♀ A. Nordman leg. (slide BW 4863), e. p. 1948 2♂ A. Nordman leg. (slides BW 4854, 4855); Kökar 666:15 24.vi.1991 1♂ J. Junnilainen leg. (slide BW 4890); EK: Virolahti 671:53 28.vi.1999 1♂ J.-P. Kaitila leg. (slide BW 4913); EH: Hattula 677:35, 9.vi.1988 1♂ Nupponen leg. (slide BW 4851); Somero 672:30 6.vi.2000 2♂, 1♀ T. Mutanen leg. (slides BW 4833, 4834 (♀), BW 4841 (♂)); 5.vi.2000, 1♂, 1♀ T. Mutanen leg. (slides BW 4835 (♀), BW 4840 (♂)), 13.vi.2000 1♀ T. Mutanen leg. (slide BW 4836); ES: Imatra 678:59, 14.vi.1998 1♂, 2♀ M. Mutanen leg., slides BW 4837 (♂), BW 4838 (♀) BW 4839 (♀); Imatra 678:59, 10–12.vi.2000 1♂, 3♀ B. Wikström leg. (slides BW 4843 (♀), BW 4844 (♀), BW 4845 (♀), BW 4846 (♂)); Joutseno 667:58 4.vi.1989 1♂ T. & K. Nupponen leg. (slide BW 4366), 10.vi.2000 1♂ B. Wikström leg. (slide BW 4818); **Latvia:** Skaune 18.v.1998 1♂ J. Junnilainen leg. (slide BW 4893); **United Kingdom:** Ballyvaghan Clare, 5.vi.1971 1♂ E. C. Pelham-Clinton leg., E.C.P-C.No. 27438 (ex larva *Lathyrus*), NMSZ 1989.035, (slide BW 4856, Coll. NMS); Ventnor, Isle of Wight 5.vi.1971 1♂ E. C. Pelham-Clinton leg., E.C.P-C.No.27439, ex larva *Lathyrus sylvestris*, leg. 1968, slide BW 4857; Aviemore, Inv. 24.vi.1969 1♀ E. C. Pelham-Clinton leg., E.C.P-C.No.25949, (ex larva *Lathyrus*), slide BW 4858, Coll. NMS.



Figs. 3–5. Abdomina of *Leucoptera*, showing the seta vestiture of terga. 3. *L. orobi*. 4. Lectotype of *L. orobi*. 5. *L. lathyrioliella*.

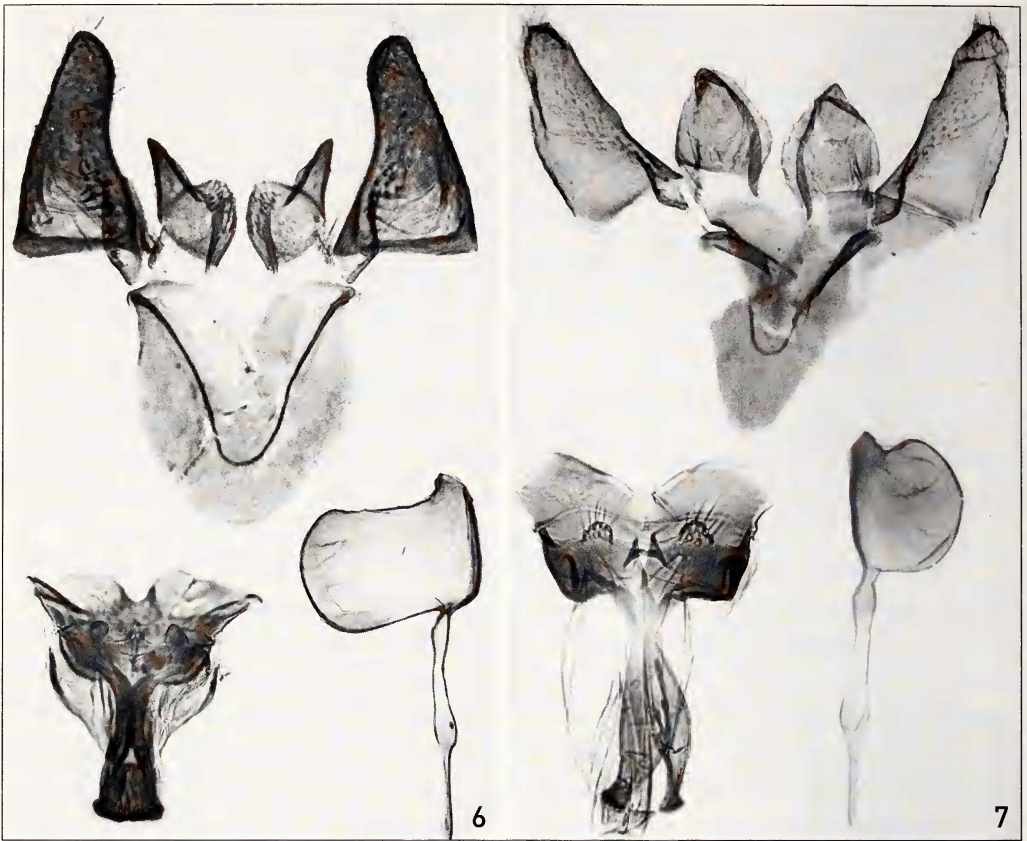
Diagnosis. For habitus see Fig. 1. Abdominal terga densely covered by stout setae (Fig. 3). Male genitalia (Fig. 6). Valva rounded at base, forming an acute-tipped extension apically, evenly tapered. Pleurallobus basally dilated, distolaterally with equally long triangular lobe. Phallosome basally with large dilation (bulbus ejaculatorius), about 1.5 times broader than long. The semicircular nodose extension of gnathos and tegumen typical to *L. lathyrioliella* vestigial.

Female genitalia (Fig. 8). Sternum 8 broad triangular, ostium bursae about half the width of sternum 8 since sternum 8 surrounds it by broadly sclerotised wall.

Life history. Emmet (1985) reports *Lathyrus linifolius* to be the host plant of *L. orobi*. In Finland it has also been found in sites where no *Lathyrus* grows, only *Vicia cracca* and *V. sepium* present as possible host plants. However, to our knowledge it has never been reared from either of these plant species. According to Emmet (1988) *L. orobi* has two generations in England. The first brood hatches from hibernated pupae during May, and the second brood flies during July. According to Emmet (1985) *L. orobi* occasionally develops a scarce second brood during July although a majority of pupae have a diapause and hibernate two or even more times. Collecting experience in Finland seems to support the view that *L. orobi* is single-brooded in Finland, the flying period from early to late June. No records from July are available.

Distribution. Finland, Estonia, Ireland, Latvia, U. K. (Scotland).

Remarks. The lectotype specimen possesses the diagnostic features of *L. orobi*, i. e. the shape of ostium bursae (Fig. 6) and the dense seta vestiture in abdominal terga (cf. Fig. 5). The latter character is, however, somewhat variable and should not alone be used in species identification.



Figs. 6–7. Male genitalia of *Leucoptera* (for each fig., top: valvae, vinculum, pleurallobus; bottom left: gnathos and tegumen; bottom right: aedeagus). **6.** *L. orobi*. **7.** *L. lathyriifoliella*.

Leucoptera lathyriifoliella (Stainton, 1866)

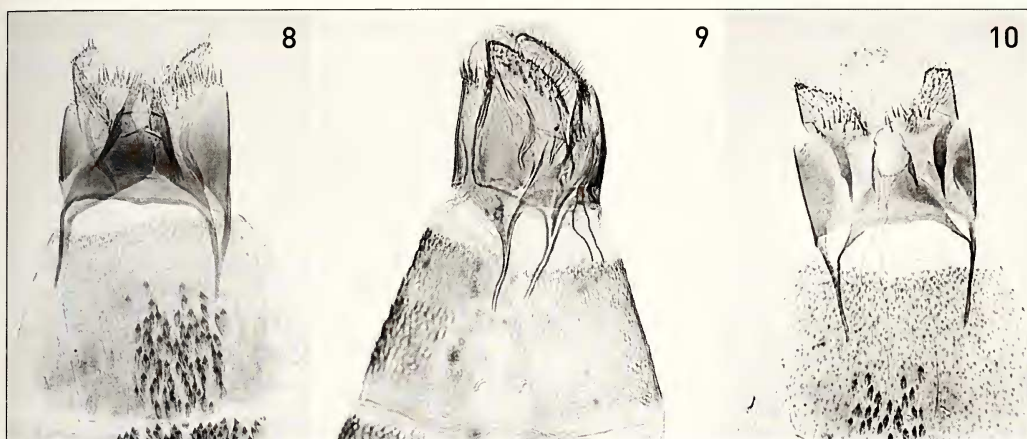
Figs. 2, 5, 7, 10

Material. England: Three syntypes and one pin without specimen: South Devon, Teignemouth, *Lathyrus*, e.l. 30.7.1861, Coll. Jordan. BMNH; South Devon, Branscombe, 1♀ 2.vi.1982 J. Langmaid leg. & Coll., 1♂, 2♀ e.l. ex *Lathyrus pratensis*, larvae 9.viii.1987, emg. 7.–12.v.1988 J. Langmaid leg. & Coll. **Finland:** V: Pargas (no date) 1♂, 2♀ A. Nordman leg. (slides BW 3239, 4847 (♀), 4860 (♂)) (ZMH); Turku 670:23.vi.1998 1♂, 1♀ e.l., T. Mutanen leg. (slides BW 4830 (♀), BW 4831 (♂)), vi.2000 2♀ e.l., T. Mutanen leg. (slides BW 4832, 4861); 20.vii.1992 1♂, 2♀ T. & K. Nupponen leg. (slides BW 4848, 4849 (♀), 4850 (♂)); Vihti, Nummela, 669:35 1♂ e.l. 1995 B. Wikström leg. (slide BW 4885); U: Inkoo 666:32 10.vi.1996 1♂ B. Wikström leg. (slide BW 4842), 1.vi.1993 1♂ B. Wikström leg. (slide BW 3988). **Germany:** Kyffhäuser 2♂, ex *Lathyrus sylvaticus* (Zool. Mus. Berlin).

Diagnosis. For habitus see Fig. 2. Abdominal terga usually sparsely covered by stout setae (cf. Fig. 8 and remarks below).

Male genitalia (Fig. 7). Valva evenly tapered to acute tip. Pleurallobus broadest medially, apically gradually tapered. Bulbus ejaculatorius about as broad as long. Gnathos and tegumen with nodose semicircular extension.

Female genitalia (Fig. 10). Sternum 8 anteriorly broad, lateroposteriorly inward curved, thus being posteriorly narrow cylindrical. Ostium bursae as broad as the posterior part of sternum 8, insignificantly surrounded by sclerotisation.



Figs. 8–10. Female genitalia of *Leucoptera*. 8. *L. orobi*. 9. *L. orobi* (lectotype). 10. *L. lathyrioliella*.

Life history. Emmet (1985) reports *L. lathyrioliella* from *Lathyrus sylvestris*. John Langmaid (personal communication) has reared this species from *Lathyrus pratensis*. In Finland it has been reared from both *Lathyrus sylvestris* and *Lathyrus linifolius*. In Finland it has also been found in sites where no *Lathyrus* grows, only *Vicia cracca* and *V. sepium* present as possible host plants. However, to our knowledge it has never been reared from either of these plant species. *L. lathyrioliella* has two generations in Finland as in England. The first generation flies from late May to mid-June, and the second generation during July.

Distribution. Finland, Germany, U. K. (England).

Remarks. The type series of *L. lathyrioliella*, preserved in BMNH, does not contain any specimens with abdomen left. There are no slides available, either. We base our opinion on the identity of the name *L. lathyrioliella* on recent samples collected in close vicinity of the type locality. These specimens, both the male and females examined, share all the genital features of *L. lathyrioliella* of authors. However, the abdominal seta vestiture is quite dense, like on specimens of *L. orobi*. This indicates that this character may be more variable than otherwise observed.

Acknowledgements

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